



Fire Safety/Firefighter

Program of Studies
2017-2018



Fire Science/Firefighting 43.0203.00

The Fire Science/Firefighting program will focus on the theory and practice of fires and firefighting. Instruction includes fire chemistry and physics, combustible materials, computer science, building construction, fire codes and related laws, fire hydraulics, fire command, fire prevention/inspection, fire protection systems, fire suppression systems, fire/arson investigation, occupational safety, equipment operation, emergency medicine and communications. Instructors must be certified fire instructors.

Emergency Medical Technology 51.0904.01

The Emergency Medical Technology program includes instruction in basic EMT procedures; medical triage; rescue operation; crisis scene management; equipment operation and maintenance; patient stabilization, monitoring, and care; drug administration; identification and preliminary diagnosis of diseases and injuries; communication and computer operations; basic anatomy, physiology, pathology, and toxicology; and professional standards and regulations.

| Emergency Medical Technology and Fire Science/Firefighting | | | | | | | |
|---|---------------------------|-------------|-------------------------|----|----|----|--------------------|
| Course Title | Post-Secondary Connection | Course Code | Recommended Grade Level | | | | Recommended Credit |
| | | | 9 | 10 | 11 | 12 | |
| Company Officer Development | | XXXXXX | | X | X | X | 1 |
| Co-op (Fire Service/EMT) | | XXXXXX | | | X | X | 1 |
| EMS Training | | 461023 | X | X | X | X | 1-6 |
| EMT—First Responder | FRS 204 | 461022 | X | X | X | X | 2 |
| Firefighting Advanced Skills I | | XXXXXX | | | X | X | 1 |
| Firefighting Advanced Skills II | | XXXXXX | | | X | X | 1 |
| Firefighting Basic Skills I | KCTCS FRS 102 | 461032 | X | X | X | X | 1 |
| Firefighting Basic Skills II | KCTCS FRS 104 | 461034 | X | X | X | X | 1 |
| Firefighting Basic Skills III | | 461031 | | X | X | X | 1 |
| Firefighting Intermediate Skills I | | 461036 | | X | X | X | 1 |
| Firefighting Intermediate Skills II | KCTCS FRS 105 | XXXXXX | | X | X | X | 1 |
| Firefighting Intermediate Skills III | | XXXXXX | | X | X | X | 1 |
| Internship (Fire Service/EMT) | | XXXXXX | | | X | X | 1 |
| Introduction to Fire Service | KCTCS FRS 101 | 461033 | X | X | X | | 1 |
| Special Topics in Fire Service | | XXXXXX | | | X | X | 1 |

LAW, PUBLIC SAFETY, CORRECTIONS, AND SECURITY CAREER PATHWAYS 2015-2016

EMERGENCY MEDICAL TECHNOLOGY CIP 51.0904.01

PATHWAY DESCRIPTION: A program that prepares individuals, under the remote supervision of physicians, to recognize, assess, and manage medical emergencies in prehospital settings and to supervise ambulance personnel. Includes instruction in basic, intermediate, and advanced EMT procedures; emergency surgical procedures; medical triage; rescue operations; crisis scene management and personnel supervision; equipment operation and maintenance; patient stabilization, monitoring, and care; drug administration; identification and preliminary diagnosis of diseases and injuries; communication and computer operations; basic anatomy, physiology, pathology, and toxicology; and professional standards and regulations.

BEST PRACTICE CORE

EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:
(KOSSA/Industry Certification)*

*Complete (4) **FOUR CREDITS:***

- 170111 Principles of Health Science
- 170141 Emergency Procedures** **AND** 170131 Medical Terminology I*
- 461022 EMT—First Responder
- 461023 EMS Training

Note: (*) Indicates half-credit (.5) course

Note: (**) Indicates course can be half-credit (.5) **OR** a full (1) credit course

Note: This pathway requires an agreement with the KY Board of Emergency Medical Services. More information explained via: www.kbems.kctcs.edu.

Paramedic

LAW, PUBLIC SAFETY, CORRECTIONS, AND SECURITY CAREER PATHWAYS 2015-2016

FIRE SCIENCE/FIREFIGHTING CIP 43.0203.00

PATHWAY DESCRIPTION: This pathway will focus on the theory and practice of fires and firefighting. Includes instruction in fire chemistry and physics, combustible materials, computer science, building construction, fire codes and related laws, fire hydraulics, fire command, fire prevention/inspection, fire protection systems, fire suppression systems, fire/arson investigation, occupational safety, equipment operation, emergency medicine and communications.

BEST PRACTICE CORE

EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:
(KOSSA/Industry Certification)*

*Complete (5) **FIVE CREDITS:***

- 461033 Introduction to Fire Service
- 461032 Firefighting Basic Skills I
- 461034 Firefighting Basic Skills II
- 461031 Firefighting Basic Skills III
- 461036 Firefighting Intermediate Skills I

*Choose from the following for the **6th credit and beyond:***

- 461066 Firefighting Intermediate Skills II
- 461067 Firefighting Intermediate Skills III
- 461062 Company Officer Development
- 461069 Special Topics in Fire Science
- 461064 Firefighting Advanced Skills I
- 461065 Firefighting Advanced Skills II
- 461063 Co-op (Fire Service/EMT)
- 461068 Internship (Fire Service/EMT)

Firefighter
Explosives Specialist
Forest Firefighter

Company Officer Development

Valid Course Code: 461062

Course Description: This course involves information and activities that will help the student understand the role of Fire Service Company Officers.

Prerequisite: 461033 *Introduction to Fire Service* and 461032 *Firefighting Basic Skills I*—
OR—Consent of the Instructor

Content/Process

Students will:

1. Recognize the company officer's role in fire service.
2. Recall rules for success in fire service.
3. Identify ways of avoiding mistakes as a new company officer.
4. Explain how operational and administrative department members work together to achieve a common goal.
5. State guidelines for handling problems to avoid being sidestepped.
6. Distinguish between discipline and punishment.
7. Identify barriers to effective delegation by matching barriers to problem situations.
8. List keys of effective delegation.
9. Delegate or refer tasks and authority.
10. Define authority.
11. Distinguish between centralized and decentralized authority.
12. List the essential elements of effective communications.
13. List specific examples of communications mediums.
14. Describe the characteristics of a good listener.
15. Give oral directions while demonstrating a process.
16. Define leadership.
17. List the five characteristics of an effective leader.
18. Demonstrate the ability to organize and lead a group session.
19. Explain the company officer's role in motivating employees.
20. Provide examples of positive and negative motivation.
21. Provide examples of effective ways of modifying behavior.
22. Practice leadership skills through mentoring and teaching topics to other students.
23. Practice leadership skills through participation in community events.

Connections

- Post-Secondary Connection—KCTCS FRS 2071 (partial task list)
- Kentucky Fire Commission/Local Office for State Fire Rescue Training
- Commission on Fire Protection Standards and Education Firefighter I Competency Evaluation
- Junior Firefighter Program
- 739 KAR 2:060. Certification and qualifications of fire protection instructors
- National Fire Protection Association—NFPA 1021 Standard for Fire Officer Professional Qualifications
- CTSO—SkillsUSA

Co-op (Fire Service/EMT)
Valid Course Code: 461063

Course Description: Cooperative Education provides supervised on-the-job work experience related to the student's educational objectives. Students participating in the Cooperative Education program receive compensation for their work. Work-based learning is designed to complement the classroom instruction. Students will be required to follow program and agency requirements for attendance and health screenings.

Prerequisite: 461033 *Introduction to Fire Service*, 461032 *Firefighting Basic Skills I*, 461034 *Firefighting Basic Skills II*, and 461036 *Firefighting Intermediate Skills I*—OR—*instructor approved acceptable combination*

Content/Process

Students will:

1. Gain career awareness and the opportunity to test career choice(s).
2. Receive work experience related to career interests prior to graduation.
3. Integrate classroom studies with work experience.
4. Receive exposure to facilities and equipment unavailable in a classroom setting.
5. Increase employability potential after graduation.
6. Develop written and oral communication skills.

Connections

- Post-Secondary Connection—KCTCS FRS 2036 Practicum
- Kentucky Fire Commission/Local Office for State Fire Rescue Training
- Commission on Fire Protection Standards and Education Firefighter I Competency Evaluation
- Junior Firefighter Program
- 739 KAR 2:060. Certification and qualifications of fire protection instructors
- National Fire Protection Association (NFPA)
- Local fire or EMS department
- CTSO—SkillsUSA

EMT—First Responder

Valid Course Code: 461022

Course Description: This basic Emergency Medical Technician Course covers all knowledge aspects of trauma care as outlined by national standards, created by federal guidelines, considered to be the responsibilities of ambulance operations. Training involves typical anatomy and physiology; patient assessment; care for respiratory and cardiac emergencies; control of bleeding; application of dressing and bandages; treatment for traumatic shock; care for fractures, dislocation, sprains and strains; medical emergencies; emergency child birth; burns and heat emergencies; environmental emergencies; principles of vehicle rescue; transportation of patients and general operations of ambulance systems.

Note: This pathway requires an agreement with the KY Board of Emergency Medical Services. More information explained via: www.kbems.kctcs.edu.

Content/Process

Students will:

1. Identify the human systems, including anatomy, physiology and an introduction and practice in patient assessment.
2. Identify the basic mechanics of respiration, signs of airway obstruction and respiratory arrest, maintaining an open airway, pulmonary resuscitation; lavations for children and infants and special conditions for the laryngectomies.
3. Identify the basics of circulation, signs and symptoms of cardiac arrest.
4. Demonstrate the procedure of cardiopulmonary resuscitation by one rescuer and two rescuers.
5. Demonstrate the use of airways, suction equipment, resuscitation devices and airway adjuncts.
6. Describe signs, symptoms, and prevention of shock and treatment of shock.
7. Identify signs of internal bleeding; external bleeding and demonstrate procedures of bleeding control.
8. Identify indicators and contra indicators relative to the use of pneumatic anti-shock garments and provide for practice in their application.
9. Identify the physiology of the skin and types of wound and demonstrate the care of wounds.
10. Demonstrate and practice the application of dressings and bandages.
11. Identify anatomy and physiology of musculoskeletal systems and definitions and types of fractures and dislocations.
12. Demonstrate the techniques of care for fractures and dislocations, sprains and strains.
13. Identify the signs and symptoms of injury to the pelvis and hip and demonstrate the emergency care for pelvic and hip injury.
14. Identify anatomy and physiology of the nervous systems; signs and symptoms of spinal fractures; general rules of care for patients with spinal injuries; signs of skull fractures; care for skull brain, face and neck injuries and practice immobilization using extrication collars and splint devices.
15. Identify functions of the abdomen, genitalia and the chest including techniques of care of these areas.

16. Describe the signs and symptoms of poisoning, bites and stings; heart attack; stroke and dyspnea and the care for medical emergencies relative to these conditions.
17. Describe the signs and symptoms and techniques of care for diabetic, abdominal distress, and substance abuse emergencies including seizures.
18. Identify relative anatomy, physiology and emergency care for emergency childbirth.
19. Identify components of assessing the newborn, care for premature infants, and pediatric emergencies.
20. Identify the degree and classification of burns and care for each classification.
21. Recognize and identify hazardous materials and precautionary procedures.
22. Identify signs and symptoms and correct techniques for heat emergencies, hypothermia and water related emergencies.
23. Describe considerations when dealing with infants, children, elderly and disadvantaged patients.
24. Identify procedures to deal with abnormal behavior and substance abuse patients.
25. Describe dealing with death and near death situations as an EMT.
26. Identify, demonstrate, and practice the procedures for lifting and transfer of patients.
27. Identify and practice the principles of patient triage.
28. Identify procedures of patient extrication from vehicles.
29. Identify the components of ambulance operations.
30. Identify the components of reports and documents associated with emergency care.
31. Identify the legal aspects of emergency care.
32. Identify communications processes associated with the operations of an emergency medical services system.
33. Identify communicable disease transmission and the universal precautions associated with bloodborne and airborne diseases.
34. Provide for in-hospital observations and training.
35. Provide for field observation of emergency medical care as a member of an ambulance crew.

Connections

- Kentucky Occupational Skill Standards/National Health Care Skill Standards
- HOSA-Future Health Professionals (www.hosa.org) or SkillsUSA (www.skillsusa.org)
- Common Core State Standards for Mathematics, ELA and 21st Century Science Standards
- Kentucky Board of Emergency Medical Services (KBEMS)
- National Registry of Emergency Medical Technicians
- American Health Association
- American Safety and Health Institute

EMS Training
Valid Course Code: 461023

Course Description: Training involves typical anatomy and physiology; patient assessment; care for respiratory and cardiac emergencies; control of bleeding, application of dressing and bandages; treatment for traumatic shock; care for fractures, dislocation, sprains and strains; medical emergencies; emergency childbirth; burns and heat emergencies; environmental emergencies; principals of vehicle rescue; transportation of patient, and general operations of emergency medical services.

Note: This pathway requires an agreement with the KY Board of Emergency Medical Services. More information explained via: www.kbems.kctcs.edu.

Content/Process

Students will:

1. Identify the three (3) major roles and responsibilities of the first responder.
2. Describe the legal aspects of providing emergency care.
3. Identify the human systems, including anatomy.
4. Identify the basic mechanics of respiration, signs of airway obstruction and respiratory arrest, maintaining an open airway, pulmonary resuscitation; Variations for children and infants and special consideration for the laryngectomies.
5. Identify comprise of circulation, and signs of cardiac arrest.
6. Demonstrate the procedure of cardiopulmonary resuscitation by one rescuer and two rescuers.
7. Demonstrate the use of airway resuscitator devices and airway adjuncts.
8. Describe signs of shock, prevention of shock and treatment of shock.
9. Identify signs of internal bleeding, external bleeding and demonstrate procedures of bleeding control.
10. Identify the physiology of the skin and classify types of bandages.
11. Demonstrate and practice the application of dressings and bandages.
12. Identify anatomy and physiology of musculoskeletal systems and definitions and types of fractures and dislocations.
13. Demonstrate the techniques of care for fractures and dislocations, sprains, and strains.
14. Identify the signs and symptoms of injury to the pelvis, and hip and demonstrate the emergency care for pelvic and hip injury.
15. Identify anatomy and physiology of the nervous system; signs and symptoms of spinal fractures' general rules of care for patients with spinal injuries; signs of skull fractures; care for skull, brain, face and neck injuries and practice immobilization using extrication collars.
16. Identify functions of the abdomen, genitalia and the chest including techniques of care for these areas.
17. Describe the signs and symptoms of poisoning, bites and medical emergencies relative to these conditions.
18. Describe the signs and symptoms and techniques of care for diabetic, abdominal distress and substance abuse emergencies including seizures.
19. Identify relative anatomy, physiology and emergency care for emergency childbirth.

20. Identify the methods to employ for assessing the newborn, care for premature infants and pediatric emergencies.
21. Identify the degree and classification of burns and care for each classification.
22. Recognize and identify hazardous materials and precautionary procedures.
23. Identify signs and symptoms and care techniques for heat emergencies, hypothermia and water related emergencies.
24. Identify procedures to deal with abnormal behavior and substance abuse patients.
25. Describe dealing with death and near death situations as a first responder.
26. Identify, demonstrate, and practice the procedures for lifting and transfer of patients.
27. Identify and practice the principles of patient triage.
28. Identify procedures of patient extrication from vehicles.
29. Identify the components of ambulance operations.
30. Identify the components of reports and documents associated with emergency care.
31. Identify communication processes associated with the operations of an Emergency Medical Services System.
32. Identify communicable disease transmission and the universal precautions associated with blood borne and airborne pathogens.

Connections

- Kentucky Occupational Skill Standards/National Health Care Skill Standards
- HOSA-Future Health Professionals (www.hosa.org) or SkillsUSA (www.skillsusa.org)
- Common Core State Standards for Mathematics, ELA and 21st Century Science Standards
- Kentucky Board of Emergency Medical Services (KBEMS)
- National Registry of Emergency Medical Technicians
- American Health Association
- American Safety and Health Institute

Firefighting Advanced Skills I

Valid Course Code: 461064

Course Description: This course provides further expansion of the Firefighting Intermediate Skills I course and includes Kentucky Fire Commission Training topics Z0000 Pumper Operations, CC0000 Drivers Training, A0000 Administration and Organization, FC40000 KY Flashover, F0000 Personal Protective Equipment II, K0000 Fire Hose, and D0000 Fire Behavior.

Prerequisite: 461067 Firefighting Intermediate Skills III and valid driver's license

Content/Process

Students will:

1. Complete the following tasks for **Z0000 Pumper Operations**.
 - a. Identify the operating principles of single-state and multiple-stage centrifugal fire pumps.
 - b. Given pump models or diagrams, identify the major components and trace the flow of water through single-state and multiple-state centrifugal pumps.
 - c. Identify the percentages of rated capacity, rated pressures, and the capacity in gallons per minute (GPM) at the rated pressures a fire department pumper is designed to deliver.
 - d. Given a fire department pumper and the necessary equipment, demonstrate an annual pumper service test.
 - e. Identify the following conditions that may result in possible pumper apparatus damage or unsafe operation: cavitation; leaking fuel, oil, or water; overheating; unusual noises; vibrations; and water hammer.
 - f. Identify corrective measures for cavitation; leaking fuel, oil, or water; overheating; unusual noises; vibrations; and water hammer.
 - g. Identify incrustation, tuberculation, and sedimentation, and their effects on the carrying capacities of water mains.
 - h. Identify and describe various types of hydrants:
 - i. Connection size and type of thread of discharge openings;
 - ii. Construction and operation of drain valve;
 - iii. Direction of operation of the main valve;
 - iv. Internal diameter of hydrant barrel;
 - v. Hydrant discharge outlet coefficient; and
 - vi. Procedures and policies of hydrant locations.
 - i. Identify the available fire flows in various areas.
 - j. Identify problems related to flows from dead-end water mains.
 - k. Given reference material, identify and explain the approximate pressure-discharge relationship for various water pipe sizes.
2. Complete the following tasks for **CC0000 Drivers Training**.
 - a. Demonstrate the performance of routine tests, inspections, and servicing functions required to assure the operational status of fire department vehicles including battery, braking system, coolant system, electrical system, fueling, hydraulic fluids, lubrication, oil levels, tire care, steering system, and tools, appliances, and equipment.

- b. Demonstrate the recording and reporting, as specified by the authority having jurisdiction, of all servicing functions.
 - c. Identify all applicable state and local laws of the authority having jurisdiction, including rules and regulations governing the safe driving and operation of fire department vehicles.
 - d. Given a fire department vehicle, identify all automotive gauges and demonstrate their usage.
 - e. Review driving skills needed for certification.
 - f. Identify and demonstrate the theory and principles of defensive driving techniques, both emergency and non-emergency.
 - g. Identify all applicable state and local laws, including rules and regulations, governing the safe driving and operation of all fire department vehicles of the authority having jurisdiction, on emergency response.
 - h. Demonstrate the legal and safe driving, positioning, and operating of assigned fire department vehicles of the authority having jurisdiction in emergency response conditions.
 - i. Describe the safety precautions necessary when driving during adverse environmental conditions.
 - j. Describe the effects of braking reaction time, load control factors, and general steering reactions on vehicle control.
 - k. Perform routine tests, inspections and servicing functions required to assure the operational status of fire department pumpers, including battery check, booster tank level (if applicable), braking system, coolant system, electrical system, hydraulic fluids, fueling, lubrication, oil levels, pumping system, steering systems, tire care, and tools, appliances, and equipment.
3. Complete the following tasks for **A0000 Administration & Organization**.
 - a. Describe the organization of the fire department.
 - b. Explain the Firefighter I's role as a member of the organization.
 - c. Explain the mission of the fire service and of the local fire department.
 - d. Explain the function of Standard Operating Procedures.
 - e. Explain fire department rules and regulations that apply to the position of Firefighting.
 - f. Explain the components of and the firefighter's role within the local incident management system.
 - g. Explain the role of other agencies that may respond to emergencies.
 - h. Describe the components of a member assistance program.
 4. Complete the following tasks for **FC40000 KY Flashover** (lecture only).
 - a. Recognize the signs of an impending flashover.
 - b. Identify and practice techniques for escaping a flashover.
 5. Complete the following tasks for **F0000 Personal Protective Equipment**.
 - a. Identify the function of the following articles of protective equipment:
 - i. Helmet with eye shield
 - ii. Hood
 - iii. Boots
 - iv. Gloves
 - v. Protective trousers

- vi. Protective coats
- vii. Self-Contained Breathing Apparatus (SCBA)
- viii. Personal Alert Safety System (PASS), and
- ix. Eye protection.
- b. Identify and demonstrate the care, use, inspection, maintenance, and limitations of the protective clothing and equipment.
- c. Demonstrate the donning of protective equipment.
- d. Identify hazardous environments that require respiratory protection.
- e. Identify the physical requirements of a SCBA wearer.
- f. Describe the uses and limitations of SCBA.
- g. Identify each component and safety feature of SCBA
- h. Describe the function of each component of SCBA.
- i. Assure that SCBA is in a safe condition for immediate use.
- j. Demonstrate the use of SCBA under the conditions of obscured visibility and restricted passage.
- k. Demonstrate the procedures for SCBA use: emergency by-pass valve, conservation of air, regulator breathing, maximum use of air under working conditions, and cylinder replacements.
- l. Demonstrate and document routine maintenance for SCBA, including inspection, cleaning, sanitizing and cylinder recharging.
- m. Demonstrate rescue procedures for the following.
 - i. A firefighter with functioning respiratory protection;
 - ii. A firefighter without functioning respiratory protection; and
 - iii. A civilian without respiratory protection.
- 6. Complete the following tasks for **K0000 Hose, Nozzles, and Appliances**.
 - a. Describe the application of each size and type of hose on a pumper as required to be carried by NFPA 1901.
 - b. Demonstrate the use of nozzles, adapters and hose appliances and tools on a pumper as required by NFPA 1901.
 - c. Advance uncharged and charged attack lines of two different sizes of 1 ½ inch or larger, from a pumper, for the following evolutions:
 - i. Into a structure;
 - ii. Up a ladder to a second floor landing;
 - iii. Up an inside stairway to an upper floor;
 - iv. Up an outside stairway to an upper floor;
 - v. Down an inside stairway to a lower floor;
 - vi. Down an outside stairway to a lower floor; and
 - vii. To an upper floor by hoisting.
 - d. Demonstrate the following given fire hose used for fire attack and water supply:
 - i. Three types of hose loads and finishes;
 - ii. Three types of hose rolls;
 - iii. Coupling and uncoupling two lengths;
 - iv. Two hose carries extending hose lines; and
 - v. Replacing burst sections of hose.

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| <ul style="list-style-type: none"> e. Demonstrate operations of a charged attack line 1 ½ inch or larger from the ground ladder. f. Demonstrate carrying a 100-foot attack line 1 ½ inch or larger into a building, connecting it to a standpipe, and advancing the line from the standpipe. g. Demonstrate a hand lay of 300 feet of supply line 2 ½ inch or larger from a pumper to a water source. h. Define a fire stream. i. Define water hammer and at least one method of its prevention. j. Demonstrate how to open and close a nozzle and how to adjust its stream pattern and flow setting, when applicable. k. Identify the type, design, operation, required nozzle pressure, and flow of a given selection of nozzles and tips. l. Define the following methods of water application: direct, indirect, combination. m. Identify precautions to be followed while advancing hose lines to a fire. n. Identify three observable results that are obtained when the proper application of a fire stream is accomplished. <p>7. Complete the following tasks for D0000 Fire Behavior.</p> <ul style="list-style-type: none"> a. Define fire. b. Define fire triangle and tetrahedron. c. Recognize the various conditions related to three (3) stages and three (3) conditions of fire and their associated hazards. d. Identify three products of combustion found in structural fires that create life hazards. e. Define the three methods of heat transfer. f. Define the three physical states of matter in which fuels are commonly found. g. Define the relationship of the concentrations of oxygen to combustibility and life safety. h. Describe the process of thermal layering that occurs in structural fires and how to avoid disturbing the normal layering of heat. | <p style="text-align: center;">Connections</p> <ul style="list-style-type: none"> • Post-Secondary Connection—KCTCS course determined through local dual/articulation agreement • Kentucky Fire Commission/Local Office for State Fire Rescue Training • Commission on Fire Protection Standards and Education Firefighter I Competency Evaluation • Junior Firefighter Program • 739 KAR 2:060. Certification and qualifications of fire protection instructors • National Fire Protection Association (NFPA) • CTSO—SkillsUSA |
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Firefighting Advanced Skills II

Valid Course Code: 461065

Course Description: This course provides further expansion of the Firefighting Intermediate Skills II course and includes Kentucky Fire Commission Training topics D0000 Fire Behavior, K0000 Fire Hose, I0000 Ropes, G0000 Forcible Entry, and F0000 Personal Protective Equipment.

Prerequisite: 461066 *Firefighting Intermediate Skills II* and 461064 *Firefighting Advanced Skills I*

Content/Process

Students will:

1. Complete the following tasks for **D0000 Fire Behavior**.
 - a. Define fire.
 - b. Define fire triangle and tetrahedron.
 - c. Recognize the various conditions related to three (3) stages and three (3) conditions of fire and their associated hazards.
 - d. Identify three products of combustion found in structural fires that create life hazards.
 - e. Define the three methods of heat transfer.
 - f. Define the three physical states of matter in which fuels are commonly found.
 - g. Define the relationship of the concentrations of oxygen to combustibility and life safety.
 - h. Describe the process of thermal layering that occurs in structural fires and how to avoid disturbing the normal layering of heat.
2. Complete the following tasks for **K0000 Hose, Nozzles, and Appliances**.
 - a. Describe the application of each size and type of hose on a pumper as required to be carried by NFPA 1901.
 - b. Demonstrate the use of nozzles, adapters and hose appliances and tools on a pumper as required by NFPA 1901.
 - c. Advance uncharged and charged attack lines of two different sizes of 1 ½ inch or larger, from a pumper, for the following evolutions:
 - i. Into a structure;
 - ii. Up a ladder to a second floor landing;
 - iii. Up an inside stairway to an upper floor;
 - iv. Up an outside stairway to an upper floor;
 - v. Down an inside stairway to a lower floor;
 - vi. Down an outside stairway to a lower floor; and
 - vii. To an upper floor by hoisting.
 - d. Demonstrate the following given fire hose used for fire attack and water supply:
 - i. Three types of hose loads and finishes;
 - ii. Three types of hose rolls;
 - iii. Coupling and uncoupling two lengths;
 - iv. Two hose carries extending hose lines; and
 - v. Replacing burst sections of hose.

- e. Demonstrate operations of a charged attack line 1 ½ inch or larger from the ground ladder.
 - f. Demonstrate carrying a 100-foot attack line 1 ½ inch or larger into a building, connecting it to a standpipe, and advancing the line from the standpipe.
 - g. Demonstrate a hand lay of 300 feet of supply line 2 ½ inch or larger from a pumper to a water source.
 - h. Define a fire stream.
 - i. Define water hammer and at least one method of its prevention.
 - j. Demonstrate how to open and close a nozzle and how to adjust its stream pattern and flow setting, when applicable.
 - k. Identify the type, design, operation, required nozzle pressure, and flow of a given selection of nozzles and tips.
 - l. Define the following methods of water application: direct, indirect, combination.
 - m. Identify precautions to be followed while advancing hose lines to a fire.
 - n. Identify three observable results that are obtained when the proper application of a fire stream is accomplished.
3. Complete the following tasks for **I0000 Ropes**.
- a. Explain the uses of and tie a bowline knot, a clove hitch, figure of eight on the bight, a Becket bend, overhand safety knot, and half-hitch, given the proper size and amount of rope.
 - b. Tie an approved knot and hoist any selected forcible entry tool, pike pole/hook, ground ladder, hose line extinguisher, or appliance to a height of at least 12 feet, 3 inches given the proper rope.
 - c. Demonstrate the procedures of inspection, maintaining and storing rope.
 - d. Use a rope to tie ladders, hose, and other objects to secure them.
 - e. Identify the reasons for placing a rope out of service.
 - f. Distinguish between life and safety and utility ropes.
4. Complete the following tasks for **G0000 Forcible Entry**.
- a. Identify materials and construction features of doors, windows, and walls and the dangers associated with forcing entry through each.
 - b. Force entry through at least 3 different types of doors, windows, and walls.
 - c. Identify materials and construction features of door and window locking devices.
 - d. Identify the method and demonstrate procedures of through-the-lock entry for doors and windows.
 - e. Identify methods and procedures for cleaning, maintaining, and inspecting hand tools used for forcible entry.
 - f. Identify and safely carry at least one of the following: cutting tool, prying tool, pulling tool, striking tool.
5. Complete the following tasks for **F0000 Personal Protective Equipment**.
- a. Identify the function of the following articles of protective equipment:
 - i. Helmet with eye shield
 - ii. Hood
 - iii. Boots
 - iv. Gloves

- v. Protective trousers
- vi. Protective coats
- vii. Self-Contained Breathing Apparatus (SCBA)
- viii. Personal Alert Safety System (PASS), and
- ix. Eye protection.
- b. Identify and demonstrate the care, use, inspection, maintenance, and limitations of the protective clothing and equipment.
- c. Demonstrate the donning of protective equipment.
- d. Identify hazardous environments that require respiratory protection.
- e. Identify the physical requirements of a SCBA wearer.
- f. Describe the uses and limitations of SCBA.
- g. Identify each component and safety feature of SCBA
- h. Describe the function of each component of SCBA.
- i. Assure that SCBA is in a safe condition for immediate use.
- j. Demonstrate the use of SCBA under the conditions of obscured visibility and restricted passage.
- k. Demonstrate the procedures for SCBA use: emergency by-pass valve, conservation of air, regulator breathing, maximum use of air under working conditions, and cylinder replacements.
- l. Demonstrate and document routine maintenance for SCBA, including inspection, cleaning, sanitizing and cylinder recharging.
- m. Demonstrate rescue procedures for the following.
 - i. A firefighter with functioning respiratory protection;
 - ii. A firefighter without functioning respiratory protection; and
 - iii. A civilian without respiratory protection.

Connections

- Post-Secondary Connection— KCTCS course determined through local dual/articulation agreement
- Kentucky Fire Commission/Local Office for State Fire Rescue Training
- Commission on Fire Protection Standards and Education Firefighter I Competency Evaluation
- Junior Firefighter Program
- 739 KAR 2:060. Certification and qualifications of fire protection instructors
- National Fire Protection Association (NFPA)
- CTSO—SkillsUSA

Firefighting Basic Skills I

Valid Course Code: 461032

Course Description: This course includes Kentucky Fire Commission Training topics I0000 Ropes, J0000 Ladders, W0000 Aircraft Rescue, Q0000 Rescue, P0021 First Aid, P0002 Bloodborne Pathogens, X0000 Emergency Disaster Planning, G0000 Forcible Entry, and P0001 CPR.

Prerequisite: 461033 *Introduction to Fire Science*

Content/Process

Students will:

1. Complete the following tasks for **I0000 Ropes**.
 - a. Explain the uses of and tie a bowline knot, a clove hitch, figure of eight on the bight, a Becket bend, overhand safety knot, and half-hitch, given the proper size and amount of rope.
 - b. Tie an approved knot and hoist any selected forcible entry tool, pike pole/hook, ground ladder, hose line extinguisher, or appliance to a height of at least 12 feet, 3 inches given the proper rope.
 - c. Demonstrate the procedures for inspection, maintaining and storing rope.
 - d. Use a rope to tie ladders, hose, and other objects to secure them.
 - e. Identify the reasons for placing a rope out of service.
 - f. Distinguish between life and safety and utility ropes.
2. Complete the following tasks for **J0000 Ladders**.
 - a. Identify the materials used in ladder construction.
 - b. Identify and describe the use of the following types of ladders:
 - i. Folding/attic,
 - ii. Roof,
 - iii. Extension,
 - iv. Straight/wall, and
 - v. Aerial devices.
 - c. Carry, position, raise, and lower the following ground ladders:
 - i. 14 foot single or wall ladder;
 - ii. 24 foot extension ladder;
 - iii. 35 foot extension ladder; and
 - iv. Folding/attic ladder.
 - d. Demonstrate the procedures of working from ground or aerial ladders with tools and appliances, with and without a safety harness.
 - e. Climb the full length of each type of ground and aerial ladder available; demonstrate carrying firefighting tools or equipment while ascending and descending; and demonstrate bringing an injured person down the ladders.
 - f. Demonstrate the deployment of a roof ladder on a pitched roof.
3. Complete the following tasks for **W0000 Aircraft Rescue**.
 - a. Explain runway and taxiway designation systems.
 - b. Explain the four levels of protective clothing used in aircraft firefighting.
 - c. Describe the various aircraft rescue and firefighting apparatus and equipment.

- d. Describe the various specialized extinguishing agents used in aircraft firefighting.
 - e. List the various aircraft types, engines and systems.
 - f. Describe the various fuel systems and types of fuel used by aircraft.
 - g. Explain fuel protection system used on all modern aircraft.
 - h. Describe the Fire and Rescue Communication Systems used at airports.
 - i. List and explain the types of aircraft incidents/accidents.
 - j. List the minimum information needed for responding units in aircraft accidents.
 - k. List the types of fires that can be expected in aircraft.
 - l. Describe the unique hazards encountered in fighting aircraft fires.
 - m. Describe the firefighting tactics required in aircraft incidents.
 - n. Describe the particular problem encountered with hazardous material on board aircraft.
 - o. Describe the personal protective equipment used in responding and mitigating aircraft hazardous material incidents.
 - p. Explain the importance of pre-incident planning in aircraft accident/incidents.
 - q. List the factors that should be considered in pre-incident planning for aircraft incidents.
 - r. Describe the procedures for post-incident operations of aircraft accidents/incidents.
 - s. List general safety precautions in an airport fire prevention program.
 - t. Explain why training is important for rescue and firefighting personnel assigned to an airport.
 - u. Describe the response to military aircraft accidents/incidents.
 - v. Describe the types of military aircraft in use and the emergency systems of military aircraft.
4. Complete the following tasks for **Q0000 Rescue**.
- a. Define and demonstrate primary and secondary search procedures under fire condition with and without a rope or hose line.
 - b. Don a life safety harness that meets the requirements of NFPA 1983, *Standard on Fire Service Life Safety Rope, Harnesses, and Hardware*.
 - c. Inspect a life safety harness and identify the conditions that would require its removal from service.
 - d. Demonstrate the removal of injured persons from an immediate hazard by the use of carries, drags and stretchers.
5. Complete the following tasks for **P0021 First Aid**.
- a. Demonstrate a primary survey for life threatening injuries.
 - b. Identify three types of external bleeding and the characteristics of each type.
 - c. Demonstrate three procedures for controlling external bleeding.
 - d. Identify characteristics and emergency medical care of thermal burns.
 - e. Identify the emergency medical care for chemical burns.
 - f. Identify symptoms and care for traumatic shock.
 - g. Identify symptoms and care for poisoning and drug overdose.
 - h. Identify the method of communication with the poison control center serving local jurisdiction.

- i. Identify signs, symptoms and care steps for fractures, dislocations, sprains and strains.
 - j. Identify the signs, symptoms, and care steps for medical and environmental emergencies included in the National Safety Council and/or American Red Cross courses.
6. Complete the following tasks for **P0002 Bloodborne Pathogens**.
- a. Discuss the basic science concerning bloodborne infection and disease.
 - b. List the modes of transmission associated with bloodborne pathogens.
 - c. Discuss treatment and community resources for infected individuals.
 - d. Identify the basic symptoms of bloodborne disease.
 - e. Discuss the legal aspects associated with bloodborne pathogens.
 - f. Discuss attitudes and behaviors regarding HIV infections and HIV disease (AIDS) processes as they relate to the HIV infected individual on a personal basis, in the work place associates with potentially infected co-workers, and as a health care provider that provides care for potentially or confirmed HIV infected patients.
 - g. Describe personal protection equipment and procedures.
 - h. Identify bio-hazardous waste and waste containers and describe procedure for handling waste.
 - i. Describe the procedures for decontaminating exposed surfaces of equipment and environmental.
 - j. Identify the procedures and policies relative to immunization and treatment programs.
 - k. List the steps for reporting all exposure incidents.
 - l. List the body fluids to which infection controls apply.
 - m. List the persons who might be expected to come under the OSHA 1910.1030 standard.
 - n. Gain an understanding of the Exposure Control Plan.
 - o. List the procedures for compliance with a local exposure control plan.
 - p. List and review the practical use of personal protective equipment.
 - q. Describe the procedure for attaining vaccinations and participating in follow-up evaluations.
 - r. Identify the labels and signs of hazards to employees.
 - s. List the training steps required of employers by OSHA 1910.1030.
 - t. Identify recordkeeping procedures relative to the standard.
7. Complete the following tasks for **X0000 Emergency Disaster Planning**.
- a. Demonstrate knowledge of the history of disasters in Kentucky.
 - b. Demonstrate an understanding of the law in Kentucky as it relates to disaster planning.
 - c. Demonstrate knowledge of the Incident Command System.
 - d. Demonstrate knowledge of the responder's role in an emergency as it related to Incident Command.
8. Complete the following tasks for **G0000 Forcible Entry**.
- a. Identify materials and construction features of doors, windows, and walls and the dangers associated with forcing entry through each.
 - b. Force entry through at least three different types of doors, windows, and walls.

- c. Identify materials and construction features of door and window locking devices.
 - d. Identify the method and demonstrate procedures of through-the-lock entry for doors and windows.
 - e. Identify methods and procedures for cleaning, maintaining, and inspecting hand tools used for forcible entry.
 - f. Identify and safely carry the following: cutting tool, prying tool, pulling tool, striking tool.
9. Complete the following tasks for **P0001 CPR**.
- a. Perform the following procedures relative to cardiopulmonary resuscitation:
 - i. Single rescuer for the adult, child, and infant;
 - ii. Two rescuer for the adult and child; and
 - iii. Management of obstructed airway for the conscious and unconscious adult, child, or infant.
 - b. Demonstrate the use of a resuscitation mask in the performance of CPR.
 - c. Complete certification for CPR and first aid through an accredited organization such as the Red Cross or American Heart Association.

Connections

- Post-Secondary Connection—KCTCS FRS 102 Firefighting Basic Skills I
- Kentucky Fire Commission/Local Office for State Fire Rescue Training
- Commission on Fire Protection Standards and Education Firefighter I Competency Evaluation
- Junior Firefighter Program
- 739 KAR 2:060. Certification and qualifications of fire protection instructors
- Red Cross/American Heart Association
- National Fire Protection Association (NFPA)
- Occupational Safety & Health Administration (www.osha.gov)
- CTSO—SkillsUSA

Firefighting Basic Skills II

Valid Course Code: 461034

Course Description: This course includes Kentucky Fire Commission Training topics R0000 Water Supply, L0000 Foam Streams, N0000 Salvage/Overhaul, S0000 Fire Alarms—Sprinklers, T0001 Hazmat Awareness, and T0002 Hazmat Operations.

Prerequisite: 461032 Firefighting Basic Skills I

Content/Process

Students will:

1. Complete the following tasks for **R0000 Water Supply**.
 - a. Connect a supply hose to a hydrant and fully open and close the hydrant.
 - b. Demonstrate hydrant-to-pumper hose connections for forward and reverse hose lays.
 - c. Assemble and connect the equipment necessary for drafting from a static water supply source.
 - d. Describe the deployment of a portable water tank.
 - e. Describe the assembling of equipment necessary for the transfer of water between portable water tanks.
 - f. Describe loading and off-loading of tanks on mobile water supply apparatus.
2. Complete the following tasks for **L0000 Foam Streams**.
 - a. Assemble and operate a foam fire stream arrangement given the appropriate equipment.
 - b. Demonstrate the methods for applying a foam stream.
3. Complete the following tasks for **N0000 Salvage/Overhaul**.
 - a. Identify the purpose of salvage and its value to the public and the fire department.
 - b. Demonstrate two folds and rolls for salvage covers.
 - c. Demonstrate two methods of deploying salvage covers to cover property.
 - d. Demonstrate the construction and use of a water chute.
 - e. Demonstrate the construction and use of a water catchall.
 - f. Demonstrate the covering or closing of building openings, including doors, windows, floors, and roofs.
 - g. Demonstrate the removal of debris and the removal and routing of water from a structure.
 - h. Demonstrate the procedures of inspection, cleaning, and maintaining salvage equipment.
 - i. Identify the purpose of overhaul.
 - j. Recognize at least four indicators of hidden fires.
 - k. Expose hidden fires by opening ceilings, walls, and floors and by pulling apart burned materials.
 - l. Separate, remove, and relocate charred material to a safe location while protecting the area of origin for determination of cause.
 - m. Define duties of Firefighting left at the fire scene for fire and security surveillance.
4. Complete the following tasks for **S0000 Fire Alarms--Sprinklers**.

- a. Explain the procedures for a citizen to report a fire or other emergency.
 - b. Explain the procedures for receiving a report of a fire or other emergency.
 - c. Define the purpose and function of all alarm-receiving instruments and personnel-alerting equipment provided to the department and its members.
 - d. Identify procedures required for receipt and processing of business and personal calls.
 - e. Define and demonstrate prescribed fire department radio procedures including routine traffic, emergency traffic and emergency evacuation signals.
 - f. Define the value of automatic sprinklers in providing safety to the occupants of a structure.
 - g. Identify a fire department sprinkler connection and water motor alarm.
 - h. Connect hose line(s) to a fire department connection of a sprinkler or standpipe system.
 - i. Explain how the automatic sprinkler head activates and releases water.
 - j. Stop the flow of water from a sprinkler head using a wedge or stopper.
 - k. Identify the main control valve on an automatic sprinkler system.
 - l. Operate a main control valve on an automatic sprinkler system from “open” to “closed” and then back to “open”.
5. Complete the following tasks for **T0001 Hazmat Awareness**.
- a. Identify the definition of hazardous materials.
 - b. Identify the DOT hazard classes and divisions of hazardous materials.
 - c. Identify common examples of materials in each hazard class or division.
 - d. Identify the primary hazards associated with each of the DOT hazard classes and divisions of hazardous materials by class or division.
 - e. Identify typical container shapes that may indicate hazardous materials.
 - f. Identify typical occupancies and locations in the community where hazardous materials are manufactured, transported, stored, used, or disposed of.
 - g. Identify facility and transportation markings and colors that indicate hazardous materials, including UN/NA identification numbers, NFPA 704 markings, military hazardous materials markings, special hazard communication markings, pipeline marker, and container markings.
 - h. Given an NFPA 704 marking, identify the significance of the colors, numbers, and special symbols.
 - i. Identify U.S. and Canadian placards and labels that indicate hazardous materials.
 - j. Identify the basic information on material safety data sheets (MSDS) and shipping papers that indicate hazardous materials.
 - k. Identify where to find material safety data sheets (MSDS).
 - l. Identify entries on a material safety data sheet (MSDS) that indicate the presence of hazardous materials.
 - m. Identify the entries on shipping papers that indicate the presence of hazardous materials
 - n. Match the name of the shipping papers found in transportation (air, highway, rail, and water) with the mode of transportation.

- o. Identify the person responsible for having the shipping papers in each mode of transportation.
- p. Identify where the shipping papers are found in each mode of transportation.
- q. Identify where the papers may be found in an emergency in each mode of transportation.
- r. Identify examples of clues (other than occupancy/location, container shape, marking/color, placard/labels and shipping papers) that use the senses of sight, sound, and odor to indicate hazardous materials.
- s. Describe the limitations of using the senses in determining the presence or absence of hazardous materials.
- t. Identify difficulties encountered in determining the specific names of hazardous materials in both facilities and transportation.
- u. Identify sources for obtaining the names of, UN/NA identification numbers for, or types of placard associated with hazardous materials in transportation.
- v. Identify sources for obtaining the names of hazardous materials in a facility.
- w. Identify the ways hazardous materials are harmful to people, the environment, and property at hazardous materials incidents.
- x. Identify the general routes of entry for human exposure to hazardous materials.
- y. Given the current edition of the Emergency Response Guidebook, identify the three methods of determining the appropriate guide paper for a specific hazardous material.
- z. Given the current edition of the Emergency Response Guidebook, identify the two general types of hazards found in each guide page.
- aa. Identify the location of both the local emergency response plan and the organization's standard operating procedures.
- bb. Given a copy of the current edition of the Emergency Response Guidebook, describe the difference between the protective action distances in the orange-bordered guide pages and the green-bordered pages in the document.
- cc. Given the local emergency response plan or the organization's standard operating procedures, identify the role of the first responder at the awareness level during a hazardous materials incident.
- dd. Given the local emergency response plan or the organization's standard operating procedures, identify the basic precautions to be taken to protect himself/herself and others in a hazardous materials incident.
- ee. Identify the precautions necessary when providing emergency medical care to victims of hazardous materials incidents.
- ff. Identify typical ignition sources found at scenes of hazardous materials incidents.
- gg. Given the identity of various hazardous materials (name, UN/NA identification number, or type placard), identify the following response information using the current edition of the Emergency Response Guidebook:
 - i. Emergency action (fire, spill, or leak and first aid);
 - ii. Personal protective equipment necessary; and
 - iii. Initial isolation and protective action distances.

- hh. Given the current edition of the Emergency Response Guidebook and the name of a hazardous material, identify the recommended personal protective equipment for the particular incident from the following list of protective equipment:
 - i. Street clothing and work uniforms;
 - ii. Structural Firefighting' protective clothing;
 - iii. Positive pressure self-contained breathing apparatus;
 - iv. Chemical-protective clothing and equipment.
 - ii. Given the current edition of the Emergency Response Guidebook, identify the definitions for each of the following protective actions:
 - i. Isolate hazard area and deny entry;
 - ii. Evacuate; and
 - iii. In-place protection.
 - jj. Given the current edition of the Emergency Response Guidebook, identify the shapes of recommended initial isolation and protective action zones.
 - kk. Given the current edition of the Emergency Response Guidebook, describe the differences between small and large spills as found in the table of isolation distances.
 - ll. Given the current edition of the Emergency Response Guidebook, identify the circumstances under which the following distances are used at a hazardous materials incident:
 - i. Table of initial isolation and protective action distances; and
 - ii. Isolation distances in the numbered guides.
 - mm. Identify the techniques used to isolate the hazard area and deny entry to unauthorized persons at hazardous materials incidents.
 - nn. Identify the initial notification procedures for hazardous materials incidents in the local emergency response plan or the organization's standard operating procedures.
6. Complete the following tasks for **T0002 Hazmat Operations**.
- a. Given examples of various hazardous materials containers, identify the general shapes of containers for liquids, gases, and solids.
 - b. Given examples of the following tank cars, identify each tank car by type:
 - i. Non-pressure tank cars with and without expansion domes;
 - ii. Pressure tank cars; and
 - iii. Cryogenic liquid tank cars.
 - c. Given examples of the following intermodal tank containers, identify each intermodal tank container by type:
 - i. Non-pressure intermodal tank containers; and
 - ii. Pressure intermodal tank containers.
 - d. Given examples of the following cargo tanks, identify each cargo tank by type:
 - i. MC-306/DOT-406 cargo tanks;
 - ii. MC-307/DOT-407 cargo tanks;
 - iii. MC-312/DOT-412 cargo tanks;
 - iv. MC-331 cargo tanks;
 - v. MC-338 cargo tanks; and

- vi. Dry bulk cargo tanks.
- e. Identify each fixed facility tank by type: non-pressure facility tanks and pressure facility tanks.
- f. Given examples of facility and transportation containers, identify the markings that differentiate one container from another.
- g. Given examples of the following transport vehicles and their corresponding shipping papers, identify the vehicle or tank identification marking in all applicable locations:
 - i. Rail transport vehicles, including tank cars;
 - ii. Intermodal equipment including tank containers; and
 - iii. Highway transport vehicles, including cargo tanks.
- h. Given examples of facility containers, identify the markings indicating container size, product contained, and/or site identification numbers.
- i. Given examples of facility and transportation situations involving hazardous materials, identify the names(s) of the hazardous material(s) in each situation.
- j. Identify the following information on a pipeline marker: product, owner, and emergency telephone number.
- k. Given a pesticide label, identify each of the following pieces of information; then match the piece of information to its significance in surveying the hazardous materials incident:
 - i. Name of pesticide
 - ii. Signal word
 - iii. Pest control product (PCP) number (in Canada)
 - iv. Precautionary statement
 - v. Hazard statement, and
 - vi. Active ingredient.
- l. Identify and list the surrounding conditions that should be noted when surveying hazardous materials incidents.
- m. Give examples of ways to verify information obtained from the survey or a hazardous materials incident.
- n. Match the definitions associated with the DOT hazard classes and divisions of hazardous materials, include refrigerated liquefied gases and cryogenic liquids, with the class or division.
- o. Identify two ways to obtain a material safety data sheet (MSDS) in an emergency.
- p. Using a material safety data sheet (MSDS) for a specified material, identify the following hazard and response information:
 - i. Physical and chemical characteristics
 - ii. Physical hazards of the material
 - iii. Health hazards of the material
 - iv. Signs and symptoms of exposure
 - v. Route of entry
 - vi. Permissible exposure limits
 - vii. Responsible party contact

- viii. Precautions for safe handling (Including hygiene practices, protective measures, procedures for cleanup of spills or leaks)
 - ix. Applicable control measures including personal protective equipment, and
 - x. Emergency and first aid procedures.
- q. Identify the type of assistance provided by, how to contact, and the information to be furnished to CHEMTREC/CANUTEC.
- r. Identify two methods of contacting the manufacturer or shipper to obtain hazard and response information.
- s. Given situations involving known hazardous materials, interpret the hazard and response information obtained for the current edition of the Emergency Response Guidebook, material safety data sheets (MSDS), CHEMTREC/CANUTEC, and shipper/manufacturer contacts.
- t. Match the following chemical and physical properties with their significance and impact on the behavior of the container and/or its contents:
 - i. Corrosivity (pH)
 - ii. Flammable (explosive) range
 - iii. Flash point
 - iv. Form (solid, liquid, gas)
 - v. Ignition (auto ignition) temperature
 - vi. Reactivity
 - vii. Specific gravity
 - viii. Toxic products of combustion
 - ix. Vapor density, and
 - x. Water solubility.
- u. Identify the differences among the following terms:
 - i. Exposure and hazard
 - ii. Exposure and contamination, and
 - iii. Contamination and secondary contamination.
- v. Identify three types of stress that could cause a container system to release its contents.
- w. Identify five ways in which containers can breach.
- x. Identify four ways in which containers can release their contents.
- y. Identify at least four dispersion patterns that can be created upon release of a hazardous material.
- z. Identify the three general time frames for predicting the length of time that exposures may be in contact with hazardous materials in an endangered area.
- aa. Identify the health and physical hazards that could cause harm.
- bb. Identify the health hazards associated with the following terms: asphyxiant, irritant/corrosive, sensitizer/allergen, convulsant, and chronic health hazard.
- cc. Identify a resource for determining the size of an endangered area of a hazardous materials incident.
- dd. Given the dimensions of the endangered area and the surrounding conditions at a hazardous materials incident, estimate the number and type of exposures within that endangered area.

- ee. Identify resources available for determining the concentrations of a released hazardous material within an endangered area.
- ff. Identify the factors for determining the extent of physical, health, and safety hazards within the endangered area of a hazardous materials incident given the concentrations of the released material.
- gg. Identify the steps for determining the number of exposures that could be saved by the first responder with the resources provided by the authority having jurisdiction and operating in a defensive fashion, given an analysis of a hazardous materials problem and the exposures already lost.
- hh. Describe the steps for determining defensive response objectives given analysis of a hazardous material incident.
- ii. Identify the defensive operations to accomplish a given response objective.
- jj. Identify the purpose for, and the procedures, equipment, and safety precautions used with each of the following control techniques:
 - i. Absorption
 - ii. Dike, dam, diversion, retention
 - iii. Dilution
 - iv. Vapor dispersion, and
 - v. Vapor suppression.
- kk. Identify the appropriate respiratory protection required for a given defensive option.
- ll. Identify the three types of respiratory protection and the advantages and limitations presented by the use of each at hazardous materials incidents.
- mm. Identify the required physical capabilities and limitations of personnel working in positive pressure self-contained breathing apparatus.
- nn. Identify the appropriate personal protective equipment required for a given defensive option.
- oo. Identify skin contact hazards encountered at hazardous materials incidents.
- pp. Identify the purpose, advantages and limitations of the following levels of protective clothing at hazardous materials incidents:
 - i. Structural firefighting clothing
 - ii. High temperature protective clothing, and
 - iii. Chemical protective clothing (liquid splash protective and vapor protective clothing).
- qq. Identify ways that personnel, personal protective equipment, apparatus, and equipment become contaminated.
- rr. Describe how the potential for secondary contamination determines the need for emergency decontamination procedures.
- ss. Identify the purpose of emergency decontamination procedures at hazardous materials incidents.
- tt. Identify the advantages and limitations of emergency decontamination procedures.
- uu. Identify the procedures for establishing scene control through control zones.
- vv. Identify the criteria for determining the location of the control zones at hazardous materials incidents.
- ww. Identify the basic techniques for evacuation and in-place protection.

- xx. Identify the considerations associated with locating emergency decontamination areas.
- yy. Demonstrate the ability to perform emergency decontamination.
- zz. Identify the items to be considered in a safety briefing prior to allowing personnel to work on a hazardous materials incident.
- aaa. Identify the role of the first responder at the operations level during hazardous materials incidents as specified in the local emergency response plan and the organizations standard operating procedures.
- bbb. Identify the levels of hazardous materials incidents as defined in the local emergency response plan.
- ccc. Identify the purpose, need, benefits and elements of an incident management system (IMS) at hazardous materials incidents.
- ddd. Identify the considerations for determining the location of the command post for a hazardous materials incident.
- eee. Identify the procedures for requesting additional resources at a hazardous materials incident.
- fff. Identify the responsibility of the safety officer.
- ggg. Identify the importance of the buddy system in implementing the planned defensive options.
- hhh. Identify the importance of the back-up personnel in implementing the planned defensive options.
- iii. Identify the safety precautions to be observed when approaching and working at hazardous materials incidents.
- jjj. Identify the symptoms of heat and cold stress.
- kkk. Identify the physical capabilities required for and the limitations of personnel working in the personal protective equipment as provided by the authority having jurisdiction.
- lll. Match the function of the operational components of the positive pressure self-contained breathing apparatus provided the hazardous materials responder to the name of the component.
- mmm. Describe the appropriate tools and equipment, and describe how to perform the following defensive control activities:
 - i. Absorption
 - ii. Dike, dam, diversion and retention
 - iii. Dilution
 - iv. Vapor dispersion, and
 - v. Vapor suppression
- nnn. Identify the location and use of the mechanical, hydraulic and air emergency remote shutoff devices as found on MC-306/DOT 406 and MC-331 cargo tanks.
- ooo. Describe the objectives and dangers of search and rescue missions at hazardous materials incidents.
- ppp. Identify the considerations for evaluating whether defensive options are effective in accomplishing the objectives.
- qqq. Describe the circumstances under which it would be prudent to pull back from a hazardous materials incident.

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|---|---|
| rrr. | Identify the methods for communicating the status of the planned response to the incident commander through the normal chain of command. |
| sss. | Identify the methods for immediate notification of the incident commander and other response personnel about critical emergency conditions at the incident. |
| Connections | |
| <ul style="list-style-type: none"> • Post-Secondary Connection—KCTCS FRS 104 Firefighting Intermediate Skills I • Kentucky Fire Commission/Local Office for State Fire Rescue Training • Commission on Fire Protection Standards and Education Firefighter I Competency Evaluation • Junior Firefighter Program • 739 KAR 2:060. Certification and qualifications of fire protection instructors • National Fire Protection Association (NFPA) • National Department of Transportation • OSHA 29 CFR 1910 120 Hazardous waste operations and emergency response • CTSO—SkillsUSA | |

Firefighting Basic Skills III

Valid Course Code: 461031

Course Description: This course includes Kentucky Fire Commission Training topics V0000 Building Construction, FC30000 KY Wildland Fire Awareness, M0000 Fire Control, H0000 Ventilation, Y0000 Fire Investigation, C0000 Communications, U0000 Fire Prevention, O0000 Victim Search/Rescue, Q0001 Vehicle Rescue, FC10000 KY FF Survival, and FC20000 KY FF Rescue.

Prerequisite: 461032 Firefighting Basic Skills I and 461034 Firefighting Basic Skills II

Content/Process

Students will:

1. Complete the following tasks for **V0000 Building Construction**.
 - a. Describe the basic structural characteristics of the following types of building construction: wood frame, ordinary, heavy timber, non-combustible, fire resistant.
 - b. Identify the general fire behavior expected with each type of building construction, including the spread of fire and the safety of the building, occupants, and Firefighting.
 - c. Describe at least three hazards associated with truss and lightweight construction.
 - d. Identify dangerous building conditions created by fire and fire suppression activities.
 - e. Identify five indicators of building collapse.
 - f. Describe the effects of fire and fire suppression activities on the following building materials: wood, masonry (brick, block, stone), cast iron, steel, reinforced concrete, gypsum wall board, glass, plaster on lath.
 - g. Define the following terms as they relate to building construction: veneer wall (exterior), party wall, fire wall, partition wall, cantilever or unsupported wall, load bearing.
2. Complete the following tasks for **FC30000 KY Wildland Fire Awareness**.
 - a. Describe the fire triangle.
 - b. Identify three methods of heat transfer.
 - c. List the three principle environmental elements affecting wildland fire behavior.
 - d. List three factors of fuel that affect the start and spread of wildland fires.
 - e. List three factors of weather that affect fuel moisture.
 - f. Describe how wind affects wildland fire spread.
 - g. Describe how the slope affects wildland fire spread.
 - h. List four factors of topography that affect wildland fire behavior.
 - i. Describe the dangerous conditions that can develop in a box canyon and steep narrow canyons.
 - j. List indicators of an approaching cold front and describe what wind changes to expect.
 - k. List three common foehn wind conditions and the areas in which they occur.
 - l. Identify a thunderstorm and describe how and when it is dangerous.

- m. Describe the daily cycle of slope and valley winds.
 - n. Describe the effect relative humidity has on wildland fire behavior.
 - o. Identify the wildland fire environment indicators that can produce problem and extreme fire behavior.
3. Complete the following tasks for **M0000 Fire Control**.
- a. **Discuss or simulate** the following live fires working as a member of a team and using appropriate protective equipment, firefighting tools, and extinguishing agents (*Working with actual live fires is not applicable for high school students*):
 - i. Piles/stacks of Class A combustible materials (exterior);
 - ii. Open pans of combustible liquids (exterior);
 - iii. Vehicle fires;
 - iv. Storage containers (exterior dumpster/trash bin); and
 - v. Class “A” combustible materials within a structure (interior attack).
 - b. Explain the procedures for extinguishing ground cover fires.
4. Complete the following tasks for **H0000 Ventilation**.
- a. Define the principles of ventilation and identify the advantages and effects of proper ventilation.
 - b. Identify the safety considerations and precautions to be taken while ventilating a structure.
 - c. Identify the signs, causes, and effects of backdraft explosion.
 - d. Identify methods of preventing a backdraft explosion.
 - e. Describe the advantages and disadvantages of the following types of ventilation: vertical, horizontal, trench/strip, mechanical, mechanical pressurization, and hydraulic.
 - f. Define procedures for each type of ventilation.
 - g. Identify the types of tools used during ventilation.
 - h. Determine the integrity of a roof system by sounding.
 - i. Open various types of windows from inside and outside, with and without the use of tools.
 - j. Demonstrate breaking window or door glass and removing obstructions.
 - k. Using both hand and power tools, demonstrate the ventilation of both pitched and flat roofs.
 - l. Recognize the characteristics of and list necessary precautions when ventilating at least the following roof types: flat, shed, pitched, and arched.
 - m. Describe how the following factors are used to determine the integrity of a roof system: construction, visual observation, and elapsed time of fire.
5. Complete the following tasks for **Y0000 Fire Investigation**.
- a. Identify the responsibility of a fire investigator.
 - b. Conduct a **simulated** investigation and collect statements at the scene.
 - c. Take the proper steps to secure a scene.
 - d. Identify legal considerations in fire investigations.
 - e. Protect and preserve all evidence.
 - f. Assess the causes and origins of fires.
6. Complete the following tasks for **C0000 Communications**.
- a. Explain the procedures for a citizen to report a fire or other emergency.

- b. Explain the procedures for receiving a report of a fire or other emergency.
 - c. Define the purpose and function of all alarm-receiving instruments and personnel-alerting equipment provided to the department and its members.
 - d. Identify procedures required for receipt and processing of business and personal calls.
 - e. Define and demonstrate prescribed fire department radio procedures including routine traffic, emergency traffic and emergency evacuation signals.
7. Complete the following tasks for **U0000 Fire Prevention**.
- a. Identify the steps used in conducting fire safety surveys.
 - b. Identify types of fuel hazards and heat source hazards.
 - c. Distinguish among common fire hazards, special fire hazards, personal hazards, and target hazards.
 - d. Review the guidelines for conducting a residential fire safety survey.
 - e. Train others in injury prevention through fire and life safety education.
8. Complete the following tasks for **O0000 Victim Search/Rescue**.
- a. Identify situational awareness considerations for a structural search.
 - b. Determine safety considerations during a structural search.
 - c. Perform a basic victim search and removal methods in a rescue situation.
 - d. Identify procedures for conducting primary/secondary searches.
 - e. Demonstrate using various drags, lifts, and carries for victims.
9. Complete the following tasks for **Q0001 Vehicle Rescue**.
- a. Identify and demonstrate the methods for removing vehicle glass.
 - b. Identify vehicle roof posts with the appropriate letter designation.
 - c. Demonstrate the removal of vehicle doors and roofs.
10. Complete the following tasks for **FC10000 KY FF Survival**.
- a. Review conditions and situations which may pose a risk to Firefighting.
 - b. Determine procedures for helping fellow Firefighting in emergency situations.
 - c. Describe situations that lead to entrapment/disorientation.
 - d. Show different techniques a firefighter can use when the primary escape route becomes blocked or if caught in a rapidly deteriorating situation.
 - e. Demonstrate self-rescue techniques and emphasize self-rescue tools regularly carried by or available to the firefighter.
11. Complete the following tasks for **FC20000 KY FF Rescue**.
- a. Practice effective communications that may be needed in an emergency situation including delivery of and response to mayday calls.
 - b. Determine the makeup and responsibilities of rapid intervention teams.
 - c. Discuss how to set up a rapid intervention team in their own department.
 - d. Practice fireground safety.
 - e. Demonstrate techniques necessary to accomplish self-rescue.
 - f. Concentrate on safely removing a trapped or unconscious firefighter from a burning structure, which can be a labor intensive operation.
 - g. Show methods that can be used to remove Firefighting who have become victims themselves.
 - h. Review OSHA requirements for "2 in and 2 out".

Connections

- Post-Secondary Connection—KCTCS course as determined by local agreement

- Kentucky Fire Commission/Local Office for State Fire Rescue Training
- Commission on Fire Protection Standards and Education Firefighter I Competency Evaluation
- Junior Firefighter Program
- 739 KAR 2:060. Certification and qualifications of fire protection instructors
- Occupational Safety & Health Administration (www.osha.gov)
- National Fire Protection Association (NFPA)
- CTSO—SkillsUSA

Firefighting Intermediate Skills I

Valid Course Code: 461036

Course Description: This course includes Kentucky Fire Commission Training topics Z0000 Pumper Operations, CC0000 Drivers Training, A0000 Administration and Organization, FC40000 KY Flashover, F0000 Personal Protective Equipment II, K0000 Fire Hose, and D0000 Fire Behavior.

Prerequisite: 461031 Firefighting Basic Skills III and valid driver's license

Content/Process

Students will:

1. Complete the following tasks for **Z0000 Pumper Operations**.
 - a. Identify the operating principles of single-state and multiple-stage centrifugal fire pumps.
 - b. Given pump models or diagrams, identify the major components and trace the flow of water through single-state and multiple-state centrifugal pumps.
 - c. Identify the percentages of rated capacity, rated pressures, and the capacity in gallons per (GPM) at the rated pressures a fire department pumper is designed to deliver.
 - d. Given a fire department pumper and the necessary equipment, demonstrate an annual pumper service test.
 - e. Identify the following conditions that may result in possible pumper apparatus damage or unsafe operation: cavitation; leaking fuel, oil, or water; overheating; unusual noises; vibrations; and water hammer.
 - f. Identify corrective measures for cavitation; leaking fuel, oil, or water; overheating; unusual noises; vibrations; and water hammer.
 - g. Identify incrustation, tuberculation, and sedimentation, and their effects on the carrying capacities of water mains.
 - h. Identify and describe various types of hydrants:
 - i. Connection size and type of thread of discharge openings;
 - ii. Construction and operation of drain valve;
 - iii. Direction of operation of the main valve;
 - iv. Internal diameter of hydrant barrel;
 - v. Hydrant discharge outlet coefficient; and
 - vi. Procedures and policies of hydrant locations.
 - i. Identify the available fire flows in various areas.
 - j. Identify problems related to flows from dead-end water mains.
 - k. Given reference material, identify and explain the approximate pressure-discharge relationship for various water pipe sizes.
2. Complete the following tasks for **CC0000 Drivers Training**.
 - a. Perform routine tests, inspections, and servicing functions required to assure the operational status of fire department vehicles including battery check, braking system, coolant system, electrical system, fueling, hydraulic fluids, lubrication, oil levels, tire care, steering system, and tools, appliances, and equipment.

- b. Demonstrate the recording and reporting, as specified by the authority having jurisdiction, of all servicing functions.
 - c. Identify all applicable state and local laws of the authority having jurisdiction, including rules and regulations governing the safe driving and operation of fire department vehicles.
 - d. Given a fire department vehicle, identify all automotive gauges and demonstrate their usage.
 - e. Review driving skills needed for certification.
 - f. Identify and demonstrate the theory and principles of defensive driving techniques, both emergency and non-emergency.
 - g. Identify all applicable state and local laws, including rules and regulations governing the safe driving and operation of all fire department vehicles of the authority having jurisdiction, on emergency response.
 - h. Demonstrate legal and safe driving, positioning, and operating of assigned fire department vehicles of the authority having jurisdiction in emergency response conditions.
 - i. Describe the safety precautions necessary when driving during adverse environmental conditions.
 - j. Describe the effects of braking reaction time, load control factors, and general steering reactions on vehicle control.
 - k. Perform routine tests, inspections and servicing functions required to assure the operational status of fire department pumpers, including battery check, booster tank level (if applicable), braking system, coolant system, electrical system, hydraulic fluids, fueling, lubrication, oil levels, pumping system, steering systems, tire care, and tools, appliances, and equipment.
3. Complete the following tasks for **A0000 Administration & Organization**.
 - a. Describe the organization of the fire department.
 - b. Explain the Firefighter I's role as a member of the organization.
 - c. Explain the mission of the fire service and of the local fire department.
 - d. Explain the function of Standard Operating Procedures.
 - e. Explain fire department rules and regulations that apply to the position of Firefighting.
 - f. Explain the components of and the firefighter's role within the local incident management system.
 - g. Explain the role of other agencies that may respond to emergencies.
 - h. Describe the components of a member assistance program.
 4. Complete the following tasks for **FC40000 KY Flashover**.
 - a. Recognize the signs of an impending flashover.
 - b. Identify and practice techniques for escaping a flashover.
 5. Complete the following tasks for **F0000 Personal Protective Equipment**.
 - a. Identify the function of the following articles of protective equipment:
 - i. Helmet with eye shield
 - ii. Hood
 - iii. Boots
 - iv. Gloves
 - v. Protective trousers

- vi. Protective coats
- vii. Self-Contained Breathing Apparatus (SCBA)
- viii. Personal Alert Safety System (PASS), and
- ix. Eye protection.
- b. Identify and demonstrate the care, use, inspection, maintenance, and limitations of the protective clothing and equipment.
- c. Demonstrate the donning of protective equipment.
- d. Identify hazardous environments that require respiratory protection.
- e. Identify the physical requirements of a SCBA wearer.
- f. Describe the uses and limitations of SCBA.
- g. Identify each component and safety feature of SCBA
- h. Describe the function of each component of SCBA.
- i. Assure that SCBA is in a safe condition for immediate use.
- j. Demonstrate the use of SCBA under the conditions of obscured visibility and restricted passage.
- k. Demonstrate the procedures for SCBA use: emergency by-pass valve, conservation of air, regulator breathing, maximum use of air under working conditions, and cylinder replacements.
- l. Demonstrate and document routine maintenance for SCBA, including inspection, cleaning, sanitizing and cylinder recharging.
- m. Demonstrate rescue procedures for the following.
 - i. A firefighter with functioning respiratory protection;
 - ii. A firefighter without functioning respiratory protection; and
 - iii. A civilian without respiratory protection.
- 6. Complete the following tasks for **K0000 Hose, Nozzles, and Appliances**.
 - a. Describe the application of each size and type of hose on a pumper as required to be carried by NFPA 1901.
 - b. Demonstrate the use of nozzles, adapters and hose appliances and tools on a pumper as required by NFPA 1901.
 - c. Advance uncharged and charged attack lines of two different sizes of 1 ½ inch or larger, from a pumper, for the following evolutions:
 - i. Into a structure
 - ii. Up a ladder to a second floor landing
 - iii. Up an inside stairway to an upper floor
 - iv. Up an outside stairway to an upper floor
 - v. Down an inside stairway to a lower floor
 - vi. Down an outside stairway to a lower floor, and
 - vii. To an upper floor by hoisting.
 - d. Demonstrate the following given fire hose used for fire attack and water supply:
 - i. Three types of hose loads and finishes
 - ii. Three types of hose rolls
 - iii. Coupling and uncoupling two lengths
 - iv. Two hose carries extending hose lines, and
 - v. Replacing burst sections of hose.

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| <ul style="list-style-type: none"> e. Demonstrate operations of a charged attack line 1 ½ inch or larger from the ground ladder. f. Demonstrate carrying a 100-foot attack line 1 ½ inch or larger into a building, connecting it to a standpipe, and advancing the line from the standpipe. g. Demonstrate a hand lay of 300 feet of supply line 2 ½ inch or larger from a pumper to a water source. h. Define a fire stream. i. Define water hammer and at least one method of its prevention. j. Demonstrate how to open and close a nozzle and how to adjust its stream pattern and flow setting, when applicable. k. Identify the type, design, operation, required nozzle pressure, and flow of a given selection of nozzles and tips. l. Define the following methods of water application: direct, indirect, combination. m. Identify precautions to be followed while advancing hose lines to a fire. n. Identify three observable results that are obtained when the proper application of a fire stream is accomplished. <p>7. Complete the following tasks for D0000 Fire Behavior.</p> <ul style="list-style-type: none"> a. Define fire. b. Define fire triangle and tetrahedron. c. Recognize the various conditions related to three (3) stages and three (3) conditions of fire and their associated hazards. d. Identify three products of combustion found in structural fires that create life hazards. e. Define the three methods of heat transfer. f. Define the three physical states of matter in which fuels are commonly found. g. Define the relationship of the concentrations of oxygen to combustibility and life safety. h. Describe the process of thermal layering that occurs in structural fires and how to avoid disturbing the normal layering of heat. | <p style="text-align: center;">Connections</p> <ul style="list-style-type: none"> • Post-Secondary Connection—KCTCS FRS 105 (this course is combined with Firefighting Intermediate Skills II to obtain FRS 105 equivalency) • Kentucky Fire Commission/Local Office for State Fire Rescue Training • Commission on Fire Protection Standards and Education Firefighter I Competency Evaluation • Junior Firefighter Program • 739 KAR 2:060. Certification and qualifications of fire protection instructors • National Fire Protection Association (NFPA) • CTSO—SkillsUSA |
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Firefighting Intermediate Skills II

Valid Course Code: 461066

Course Description: This course includes Kentucky Fire Commission Training topics D0000 Fire Behavior, K0000 Fire Hose, I0000 Ropes, G0000 Forcible Entry, and F0000 Personal Protective Equipment. Students will complete the NIMS 100, 200, 300, and 700 certifications during this course.

Prerequisite: 461036 Firefighting Intermediate Skills I

Content/Process

Students will:

1. Complete the following tasks for **D0000 Fire Behavior**.
 - a. Define fire.
 - b. Define fire triangle and tetrahedron.
 - c. Recognize the various conditions related to three (3) stages and three (3) conditions of fire and their associated hazards.
 - d. Identify three products of combustion found in structural fires that create life hazards.
 - e. Define the three methods of heat transfer.
 - f. Define the three physical states of matter in which fuels are commonly found.
 - g. Define the relationship of the concentrations of oxygen to combustibility and life safety.
 - h. Describe the process of thermal layering that occurs in structural fires and how to avoid disturbing the normal layering of heat.
2. Complete the following tasks for **K0000 Hose, Nozzles, and Appliances**.
 - a. Describe the application of each size and type of hose on a pumper as required to be carried by NFPA 1901.
 - b. Demonstrate the use of nozzles, adapters and hose appliances and tools on a pumper as required by NFPA 1901.
 - c. Advance uncharged and charged attack lines of two different sizes of 1 ½ inch or larger, from a pumper, for the following evolutions:
 - i. Into a structure
 - ii. Up a ladder to a second floor landing
 - iii. Up an inside stairway to an upper floor
 - iv. Up an outside stairway to an upper floor
 - v. Down an inside stairway to a lower floor
 - vi. Down an outside stairway to a lower floor, and
 - vii. To an upper floor by hoisting.
 - d. Demonstrate the following given fire hose used for fire attack and water supply:
 - i. Three types of hose loads and finishes
 - ii. Three types of hose rolls
 - iii. Coupling and uncoupling two lengths
 - iv. Two hose carries extending hose lines, and
 - v. Replacing burst sections of hose.

- e. Demonstrate operations of a charged attack line 1 ½ inch or larger from the ground ladder.
 - f. Demonstrate carrying a 100-foot attack line 1 ½ inch or larger into a building, connecting it to a standpipe, and advancing the line from the standpipe.
 - g. Demonstrate a hand lay of 300 feet of supply line 2 ½ inch or larger from a pumper to a water source.
 - h. Define a fire stream.
 - i. Define water hammer and at least one method of its prevention.
 - j. Demonstrate how to open and close a nozzle and how to adjust its stream pattern and flow setting, when applicable.
 - k. Identify the type, design, operation, required nozzle pressure, and flow of a given selection of nozzles and tips.
 - l. Define the following methods of water application: direct, indirect, combination.
 - m. Identify precautions to be followed while advancing hose lines to a fire.
 - n. Identify three observable results that are obtained when the proper application of a fire stream is accomplished.
3. Complete the following tasks for **I0000 Ropes**.
- a. Explain the uses of and tie a bowline knot, a clove hitch, figure of eight on the bight, a Becket bend, overhand safety knot, and half-hitch, given the proper size and amount of rope.
 - b. Tie an approved knot and hoist any selected forcible entry tool, pike pole/hook, ground ladder, hose line extinguisher, or appliance to a height of at least 12 feet, 3 inches given the proper rope.
 - c. Demonstrate the procedures of inspection, maintaining and storing rope.
 - d. Use a rope to tie ladders, hose, and other objects to secure them.
 - e. Identify the reasons for placing a rope out of service.
 - f. Distinguish between life and safety and utility ropes.
4. Complete the following tasks for **G0000 Forcible Entry**.
- a. Identify materials and construction features of doors, windows, and walls and the dangers associated with forcing entry through each.
 - b. Force entry through at least three different types of doors, windows, and walls.
 - c. Identify materials and construction features of door and window locking devices.
 - d. Identify the method and demonstrate procedures of through-the-lock entry for doors and windows.
 - e. Identify methods and procedures for cleaning, maintaining, and inspecting hand tools used for forcible entry.
 - f. Identify and safely carry at least one of the following: cutting tool, prying tool, pulling tool, striking tool.
5. Complete the following tasks for **F0000 Personal Protective Equipment**.
- a. Identify the function of the following articles of protective equipment:
 - i. Helmet with eye shield
 - ii. Hood
 - iii. Boots
 - iv. Gloves

- v. Protective trousers
- vi. Protective coats
- vii. Self-Contained Breathing Apparatus (SCBA)
- viii. Personal Alert Safety System (PASS), and
- ix. Eye protection.
- b. Identify and demonstrate the care, use, inspection, maintenance, and limitations of the protective clothing and equipment.
- c. Demonstrate the donning of protective equipment.
- d. Identify hazardous environments that require respiratory protection.
- e. Identify the physical requirements of a SCBA wearer.
- f. Describe the uses and limitations of SCBA.
- g. Identify each component and safety feature of SCBA
- h. Describe the function of each component of SCBA.
- i. Assure that SCBA is in a safe condition for immediate use.
- j. Demonstrate the use of SCBA under the conditions of obscured visibility and restricted passage.
- k. Demonstrate the procedures for SCBA use: emergency by-pass valve, conservation of air, regulator breathing, maximum use of air under working conditions, and cylinder replacements.
- l. Demonstrate and document routine maintenance for SCBA, including inspection, cleaning, sanitizing and cylinder recharging.
- m. Demonstrate rescue procedures for the following.
 - i. A firefighter with functioning respiratory protection;
 - ii. A firefighter without functioning respiratory protection; and
 - iii. A civilian without respiratory protection.
- 6. Participate in the NIMS 100, 200, 300, and 700 exams.

Connections

- Post-Secondary Connection—KCTCS FRS 105 (this course is combined with Firefighting Intermediate Skills I to obtain FRS 105 equivalency)
- Kentucky Fire Commission/Local Office for State Fire Rescue Training
- Commission on Fire Protection Standards and Education Firefighter I Competency Evaluation
- Junior Firefighter Program
- 739 KAR 2:060. Certification and qualifications of fire protection instructors
- National Fire Protection Association (NFPA)
- CTSO—SkillsUSA

Firefighting Intermediate Skills III

Valid Course Code: 461067

Course Description: This course provides further expansion of Firefighter Basic Skills III and includes Kentucky Fire Commission Training topics V0000 Building Construction, M0000 Fire Control, H0000 Ventilation, Y0000 Fire Investigation, C0000 Communications, U0000 Fire Prevention, O0000 Victim Search/Rescue, Q0001 Vehicle Rescue, FC10000 KY FF Survival, and FC20000 KY FF Rescue.

Prerequisite: 461066 Firefighting Intermediate Skills II

Content/Process

Students will:

1. Complete the following tasks for **V0000 Building Construction**.
 - a. Describe the basic structural characteristics of the following types of building construction: wood frame, ordinary, heavy timber, non-combustible, fire resistant.
 - b. Identify the general fire behavior expected with each type of building construction, including the spread of fire and the safety of the building, occupants, and Firefighting.
 - c. Describe at least three hazards associated with truss and lightweight construction.
 - d. Identify dangerous building conditions created by fire and fire suppression activities.
 - e. Identify five indicators of building collapse.
 - f. Describe the effects of fire and fire suppression activities on the following building materials: wood, masonry (brick, block, stone), cast iron, steel, reinforced concrete, gypsum wall board, glass, plaster on lath.
 - g. Define the following terms as they relate to building construction: veneer wall (exterior), party wall, fire wall, partition wall, cantilever or unsupported wall, load bearing.
2. Complete the following tasks for **M0000 Fire Control**.
 - a. **Discuss or simulate** the following live fires working as a member of a team and using appropriate protective equipment, firefighting tools, and extinguishing agents (*Working with actual live fires is not applicable for high school students*):
 - i. Piles/stacks of Class A combustible materials (exterior);
 - ii. Open pans of combustible liquids (exterior);
 - iii. Vehicle fires;
 - iv. Storage containers (exterior dumpster/trash bin); and
 - v. Class "A" combustible materials within a structure (interior attack).
 - b. Explain the procedures for extinguishing ground cover fires.
3. Complete the following tasks for **H0000 Ventilation**.
 - a. Define the principles of ventilation and identify the advantages and effects of proper ventilation.
 - b. Identify the safety considerations and precautions to be taken while ventilating a structure.

- c. Identify the signs, causes, and effects of backdraft explosion.
 - d. Identify methods of preventing a backdraft explosion.
 - e. Describe the advantages and disadvantages of the following types of ventilation: vertical, horizontal, trench/strip, mechanical, mechanical pressurization, and hydraulic.
 - f. Define procedures for each type of ventilation.
 - g. Identify the types of tools used during ventilation.
 - h. Determine the integrity of a roof system by sounding.
 - i. Open various types of windows from inside and outside, with and without the use of tools.
 - j. Demonstrate breaking window or door glass and removing obstructions.
 - k. Using both hand and power tools, demonstrate the ventilation of both pitched and flat roofs.
 - l. Recognize the characteristics of and list necessary precautions when ventilating at least the following roof types: flat, shed, pitched, and arched.
 - m. Describe how the following factors are used to determine the integrity of a roof system: construction, visual observation, and elapsed time of fire.
4. Complete the following tasks for **Y0000 Fire Investigation**.
 - a. Identify the responsibility of a fire investigator.
 - b. Conduct a **simulated** investigation and collect statements at the scene.
 - c. Take the proper steps to secure a scene.
 - d. Identify legal considerations in fire investigations.
 - e. Protect and preserve all evidence.
 - f. Assess the causes and origins of fires.
 5. Complete the following tasks for **C0000 Communications**.
 - a. Explain the procedures for a citizen to report a fire or other emergency.
 - b. Explain the procedures for receiving a report of a fire or other emergency.
 - c. Define the purpose and function of all alarm-receiving instruments and personnel-alerting equipment provided to the department and its members.
 - d. Identify procedures required for receipt and processing of business and personal calls.
 6. Define and demonstrate prescribed fire department radio procedures including routine traffic, emergency traffic and emergency evacuation signals.
 7. Complete the following tasks for **U0000 Fire Prevention**.
 - a. Identify the steps used in conducting fire safety surveys.
 - b. Identify types of fuel hazards and heat source hazards.
 - c. Distinguish among common fire hazards, special fire hazards, personal hazards, and target hazards.
 - d. Review the guidelines for conducting a residential fire safety survey.
 - e. Train others in injury prevention through fire and life safety education.
 8. Complete the following tasks for **O0000 Victim Search/Rescue**.
 - a. Identify situational awareness considerations for a structural search.
 - b. Determine safety considerations during a structural search.
 - c. Perform a basic victim search and removal methods in a rescue situation.
 - d. Identify procedures for conducting primary/secondary searches.
 - e. Demonstrate using various drags, lifts, and carries for victims.

9. Complete the following tasks for **Q0001 Vehicle Rescue**.
 - a. Identify and demonstrate the methods for removing vehicle glass.
 - b. Identify vehicle roof posts with the appropriate letter designation.
 - c. Demonstrate the removal of vehicle doors and roofs.
10. Complete and refine tasks for **FC10000 KY FF Survival** as learned in 461031 Firefighting Basic Skills III.
11. Complete and refine tasks for **FC20000 KY FF Rescue** as learned in 461031 Firefighting Basic Skills III.
12. Review OSHA requirements for "2 in and 2 out".

Connections

- Post-Secondary Connection—KCTCS course determined through local dual/articulation agreement
- Kentucky Fire Commission/Local Office for State Fire Rescue Training
- Commission on Fire Protection Standards and Education Firefighter I Competency Evaluation
- Junior Firefighter Program
- 739 KAR 2:060. Certification and qualifications of fire protection instructors
- Occupational Safety & Health Administration (www.osha.gov)
- National Fire Protection Association (NFPA)
- CTSO—SkillsUSA

Internship (Fire Service/EMT)
Valid Course Code: 461068

Course Description: Internship provides supervised on-the-job work experience related to the student's educational objectives. Students participating in the Internship program do not receive compensation for their work. Work-based learning is designed to complement the classroom instruction. Students will be required to follow program and agency requirements for attendance and health screenings.

Content/Process

Students will:

1. Gain career awareness and the opportunity to test career choice(s).
2. Receive work experience related to career interests prior to graduation.
3. Integrate classroom studies with work experience.
4. Receive exposure to facilities and equipment unavailable in a classroom setting.
5. Increase employability potential after graduation.
6. Develop written and oral communication skills.

Connections

- Post-Secondary Connection—KCTCS course determined through local dual/articulation agreement
- Kentucky Fire Commission/Local Office for State Fire Rescue Training
- Commission on Fire Protection Standards and Education Firefighter I Competency Evaluation
- Junior Firefighter Program
- 739 KAR 2:060. Certification and qualifications of fire protection instructors
- National Fire Protection Association (NFPA)
- Local fire or EMS department
- CTSO—SkillsUSA

Introduction to Fire Service
Valid Course Code: 461033

Course Description: This course includes Kentucky Fire Commission Training topics A0000 Administration & Organization, D0000 Fire Behavior, B0000 Safety, F0000 Personal Protective Equipment, E0000 Extinguishers, and K0000 Hose, Nozzles, and Appliances.

Content/Process

Students will:

1. Complete the following tasks for **A0000 Administration & Organization**.
 - a. Describe the organization of the fire department.
 - b. Explain the Firefighter I's role as a member of the organization.
 - c. Explain the mission of the fire service and of the local fire department.
 - d. Explain the function of Standard Operating Procedures.
 - e. Explain fire department rules and regulations that apply to the position of Firefighting.
 - f. Explain the components of and the firefighter's role within the local incident management system.
 - g. Explain the role of other agencies that may respond to emergencies.
 - h. Describe the components of a member assistance program.
2. Complete the following tasks for **D0000 Fire Behavior**.
 - a. Define fire.
 - b. Define fire triangle and tetrahedron.
 - c. Recognize the various conditions related to three stages and three conditions of fire and their associated hazards.
 - d. Identify three products of combustion found in structural fires that create life hazards.
 - e. Define the three methods of heat transfer.
 - f. Define the three physical states of matter in which fuels are commonly found.
 - g. Define the relationship of the concentrations of oxygen to combustibility and life safety.
 - h. Describe the process of thermal layering that occurs in structural fires and how to avoid disturbing the normal layering of heat.
3. Complete the following tasks for **B0000 Safety**.
 - a. Describe the responsibility of a firefighter as referenced by NFPA 1500.
 - b. Describe the elements of a personnel accountability system and demonstrate the application of the system at an incident.
 - c. Identify dangerous building conditions created by fire.
 - d. Demonstrate techniques for action when trapped or disoriented in a fire situation or in a hostile environment.
 - e. Explain hazards related to electrical emergencies.
 - f. Demonstrate safety procedures when using fire service lighting equipment.
 - g. Demonstrate the use of seat belts, noise barriers, and other safety equipment provided for protection while riding on apparatus.
 - h. Demonstrate safety procedures when mounting, dismounting and operation around fire apparatus.
 - i. Shut off the utility services to a building.

- j. Identify a minimum of three common types of accidents or injuries, and their causes that occur in various fire department activities.
 - k. Identify safety procedures for ensuring a safe station/facility environment.
 - l. Identify potential long-term consequences of exposure to products of combustion.
4. Complete the following tasks for **F0000 Personal Protective Equipment**.
- a. Identify the function of the following articles of protective equipment:
 - i. Helmet with eye shield
 - ii. Hood
 - iii. Boots
 - iv. Gloves
 - v. Protective trousers
 - vi. Protective coats
 - vii. Self-Contained Breathing Apparatus (SCBA)
 - viii. Personal Alert Safety System (PASS), and
 - ix. Eye protection.
 - b. Identify and demonstrate the care, use, inspection, maintenance, and limitations of protective clothing and equipment.
 - c. Demonstrate the donning of protective equipment.
 - d. Identify hazardous environments that require respiratory protection.
 - e. Identify the physical requirements of a SCBA wearer.
 - f. Describe the uses and limitations of SCBA.
 - g. Identify each component and safety feature of SCBA
 - h. Describe the function of each component of SCBA.
 - i. Assure that SCBA is in a safe condition for immediate use.
 - j. Demonstrate the use of SCBA under the conditions of obscured visibility and restricted passage.
 - k. Demonstrate the procedures for SCBA use: emergency by-pass valve, conservation of air, regulator breathing, maximum use of air under working conditions, and cylinder replacements.
 - l. Demonstrate and document routine maintenance for SCBA, including inspection, cleaning, sanitizing and cylinder recharging.
 - m. Demonstrate rescue procedures for the following.
 - i. A firefighter with functioning respiratory protection;
 - ii. A firefighter without functioning respiratory protection; and
 - iii. A civilian without respiratory protection.
5. Complete the following tasks for **E0000 Extinguishers**.
- a. Identify the classification of fires as they relate to fire extinguishers.
 - b. Define the portable extinguishers rating systems.
 - c. Identify the appropriate extinguishers and the application procedures for the various classes of fire, given a group of different extinguishers.
 - d. Extinguish Class A and B fires using the proper fire extinguishers.
6. Complete the following tasks for **K0000 Hose, Nozzles, and Appliances**.
- a. Describe the application of each size and type of hose on a pumper as required to be carried by NFPA 1901.

- b. Demonstrate the use of nozzles, adapters and hose appliances and tools on a pumper as required by NFPA 1901.
- c. Advance uncharged and charged attack lines of two different sizes of 1 ½ inch or larger, from a pumper, for the following evolutions:
 - i. Into a structure;
 - ii. Up a ladder to a second floor landing;
 - iii. Up an inside stairway to an upper floor;
 - iv. Up an outside stairway to an upper floor;
 - v. Down an inside stairway to a lower floor;
 - vi. Down an outside stairway to a lower floor; and
 - vii. To an upper floor by hoisting.
- d. Demonstrate the following given fire hose used for fire attack and water supply:
 - i. Three types of hose loads and finishes;
 - ii. Three types of hose rolls;
 - iii. Coupling and uncoupling two lengths;
 - iv. Two hose carries extending hose lines; and
 - v. Replacing burst sections of hose.
- e. Demonstrate operations of a charged attack line 1 ½ inch or larger from the ground ladder.
- f. Demonstrate carrying a 100-foot attack line 1 ½ inch or larger into a building, connecting it to a standpipe, and advancing the line from the standpipe.
- g. Demonstrate a hand lay of 300 feet of supply line 2 ½ inch or larger from a pumper to a water source.
- h. Define a fire stream.
- i. Define water hammer and at least one method of its prevention.
- j. Demonstrate how to open and close a nozzle and how to adjust its stream pattern and flow setting, when applicable.
- k. Identify the type, design, operation, required nozzle pressure, and flow of a given selection of nozzles and tips.
- l. Define the following methods of water application: direct, indirect, combination.
- m. Identify precautions to be followed while advancing hose lines to a fire.
- n. Identify three observable results that are obtained when the proper application of a fire stream is accomplished.

Connections

- Post-Secondary Connection—KCTCS FRS 101 Introduction to Fire Service
- Kentucky Fire Commission/Local Office for State Fire Rescue Training
- Commission on Fire Protection Standards and Education Firefighter I Competency Evaluation
- Junior Firefighter Program
- 739 KAR 2:060. Certification and qualifications of fire protection instructors
- National Fire Protection Association (NFPA)
- CTSO—SkillsUSA

Special Topics – Emergency and Fire Services
Valid Course Code: 461069

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| Course Description: Special Topics is an expanded course offering the study of emergency and fire services issues. Topics may vary at the discretion of the instructor. |
| Content/Process |
| Students will: <ol style="list-style-type: none">1. Tasks will be developed by the instructor related to the project to be completed.2. Tasks will include practice in written and oral communications. |
| Connections |
| <ul style="list-style-type: none">• Post-Secondary Connection—KCTCS course determined through local dual/articulation agreement• Kentucky Fire Commission/Local Office for State Fire Rescue Training• Commission on Fire Protection Standards and Education Firefighter I Competency Evaluation• Junior Firefighter Program• National Fire Protection Association (NFPA)• Kentucky Board of Emergency Medical Services (KBEMS)• CTSO—SkillsUSA |